REMARKS

Claims 1-28 are currently pending and rejected by the Office Action. Claims 15-17 have been allowed. Claims 2, 4-14, 19-23, and 25-28 were objected to as containing allowable subject matter, but depend on a rejected base claim. The specification has been objected to by the Office Action as containing new matter.

Claims 1, 15, 18, and 24 have been amended. The specification has been amended at page 4, lines 1-8. The drawings have been at amended at Figures 1A and 1B to include reference numerals to support and clarify amendments to the specification and claims. No new matter has been added. No claims have been cancelled. Accordingly, Claims 1-28 remain under prosecution in this application.

I. Formal Matters

1. As shown below, Applicant has amended the drawings at Figures 1A and 1B to include reference numerals "101," "103," "X," and "D." New reference numeral "101" in Figure 1A points to a gap defined by the walls of kissing unbond defect 100. New reference numeral "103" in Figure 1B points to an enlarged gap defined by the walls of the kissing unbond defect 100. New reference numeral "X" in Figure 1B points to an area of little or no surface displacement of a surface 102. New reference numeral "D" in Figure 1B points to a noticeable surface displacement of the surface 102.

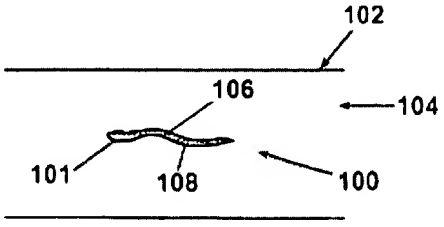

Fig. 1A

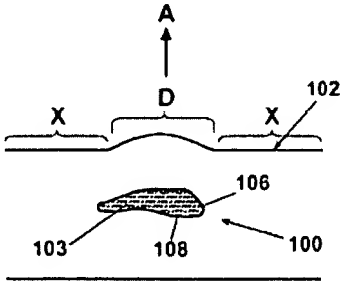

Fig. 1B

Applicant also has cancelled a series of four arrows pointing away from the surface 102 in Figure 1B and has replaced the series of four arrows pointing away from the surface 102 with a single arrow now identified as, "A," pointing away from the surface 102. No new matter has been added. Applicant respectfully requests that the replacement sheet of drawings be entered.

2. The specification at page 4, first full paragraph, has been objected to by the Office Action as containing new matter that was previously added by amendment. By this amendment, Applicant cancels the subject matter the Office Action considered to be new matter. By this amendment, Applicant has also amended the specification at page 4, first full paragraph to include the new reference numerals described above that are associated with Figures 1A and 1B.

Applicant has also amended the specification at page 4, first full paragraph to recite *"that the evaluation of the specimen 104 includes varying the degree of contact between the walls 106, 108 of the kissing unbond defect 100 in a way that does not cause the walls 106, 108 to intersect the surface 102 of the specimen 104. By varying the degree of contact between the walls 106, 108, gap 101 is enlarged 103. Enlarged gap 103 exacerbates the heat flow characteristics of the defect thereby enhancing the detectability of the defect 100."* Support for this amendment can be found at page 6, lines 1-2, page 8, line 14 – page 9, line 1, and Figures 1A and 1B of the originally-filed specification. No new matter has been added. Applicant respectfully requests that the amendment to the specification be entered.

II. The Claims Define Patentable Subject Matter

1. Claims 1-14 and 24 were rejected under 35 USC § 112, first and second paragraphs, for failing to comply with the written description requirement and for being indefinite. Applicant has cancelled the limitations objected to by the Examiner, rendering the rejection moot. Claims 1-14 and 24 and are therefore in allowable form. Withdrawal of the rejection to Claims 1-14 and 24 is respectfully requested.

2. Claims 1, 3, 18, and 24 were rejected under 35 USC § 103 as being unpatentable over U.S. 6,236,049 to Thomas et al. (hereinafter, "Thomas") in view of U.S. 5,111,048 to Devitt (hereinafter, "Devitt"). Applicant respectfully traverses the rejection.

Claims 1, 18, and 24 have been amended. Referring to Claim 1, the amendment includes the step of *"applying a non-destructive force to the specimen to vary a degree of contact between walls of said subsurface kissing unbond defect without causing said walls to intersect a surface of said specimen; wherein the magnitude of the force used to vary the degree of contact between the walls is sufficient to disrupt a flow of thermal energy through said kissing unbond defect by exacerbating a thermal discontinuity associated with said kissing unbond defect."* Referring to Claim 18, the amendment includes *"means for applying a force to the specimen, wherein the*

force applied by the applying means is sufficient to vary a degree of contact between walls of said subsurface kissing unbond defect without causing said walls to intersect a surface of said specimen thereby disrupting a flow of thermal energy through the specimen to exacerbate a thermal discontinuity within said specimen." Referring to Claim 24, the amendment includes *"applying a force to the specimen, wherein the magnitude of the force is sufficient to vary a degree of contact between walls of said subsurface kissing unbond defect without causing said walls to intersect a surface of said specimen thereby disrupting a flow of thermal energy through the specimen to render a thermal discontinuity within said specimen."*

Neither Thomas nor Devitt, singularly, or, in combination teach or suggest the invention as claimed. Thomas discloses a means of using ultrasonic energy applied to a specimen to cause the faces of the defects and cracks in the specimen to rub against each other thereby creating heat. See column 5, lines 13-15. More specifically, Thomas utilizes a system (10) including an ultrasonic transducer (14) coupled to a specimen (12) through a coupler (16) at an end (18) of the transducer (14) for detecting defects, such as cracks. See Figures 1-2.

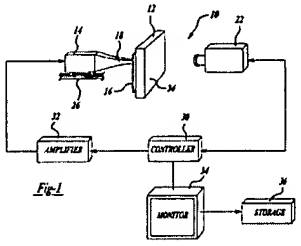

Fig-1

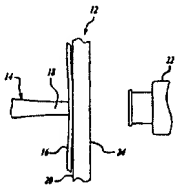
Fig-2

The coupler (16) is a piece of soft metal that couples ultrasonic energy into the specimen (12). See col. 4, lines 19-34. The system (10) in Thomas enables the detection of open fatigue cracks (40) and closed cracks (50) that propagate to, and intersect, a surface of a specimen (42, 52). See Figures 5A-6.

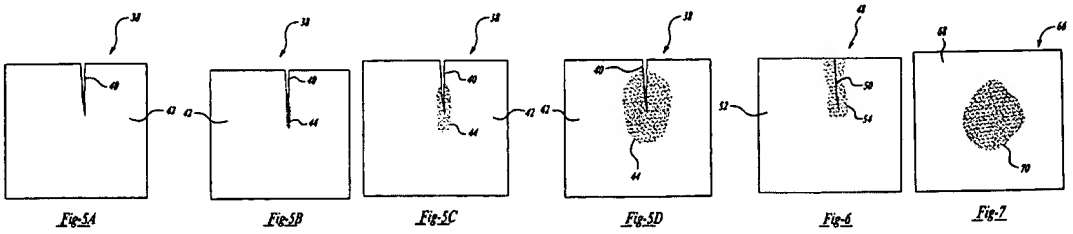
Fig-5A Fig-5B Fig-5C Fig-5D Fig-6 Fig-7

According to an embodiment, Thomas appears to indicate that the above-described system (10) may be also utilized in identifying kissing disbonds. See col. 6, lines 22-27 and Figure 7. However, Thomas does not teach applying a force which is sufficient to disrupt a flow of thermal energy . . . by **exacerbating** a **thermal discontinuity**. But rather, Thomas teaches

applying an ultrasonic pulse to a closed crack to cause it to heat up (i.e. **creating** a **thermal source**) and be visible (see col. 6, lines 10-15 and 55-60). In short, the claimed invention includes "exacerbating a thermal discontinuity" which is not made obvious in view of Thomas' teaching of creating a thermal source.

There is no motivation to combine Devitt with Thomas. In fact, it appears to the undersigned that Devitt teaches away from the technique taught by Thomas. Specifically, Thomas teaches a means of *bringing together* faces of the defects and cracks in the specimen to rub against each other. In contrast, Devitt teaches manipulating the faces of a defect to *move apart* in order to "open at surface 18." "Bringing together" is the opposite of "moving apart." The undersigned does not believe that the two techniques can be joined with one another or can be reconciled with one another.

Even if there was motivation to combine Devitt with Thomas, Devitt does nothing to supplement the deficient teaching of Thomas. Specifically, Devitt teaches a method for applying stress to component (10) in the direction of arrows (70, 74) to cause fatigue cracks in edges of bolt holes, rivet holes, and the like to open at a surface (18). By applying a stress to component (10), as taught by Devitt, the faces of the defects and cracks of the specimen are forced apart from one another thereby preventing them from rubbing against one another, as taught by Thomas. Even further, Devitt goes on to state that stress or loading should be controlled so that severe damage to the component is prevented. Any test force that damages a sample during testing cannot be said to be a non-destructive force. Thus, Devitt explicitly teaches a destructive analysis of a specimen and teaches away from the claimed non-destructive invention. See col. 7, lines 27-48 and Figure 1.

AMENDMENTS TO THE DRAWINGS

The attached sheet(s) of drawings includes changes to Figures 1A and 1B.

Attachment: Replacement sheet
Red-line sheet

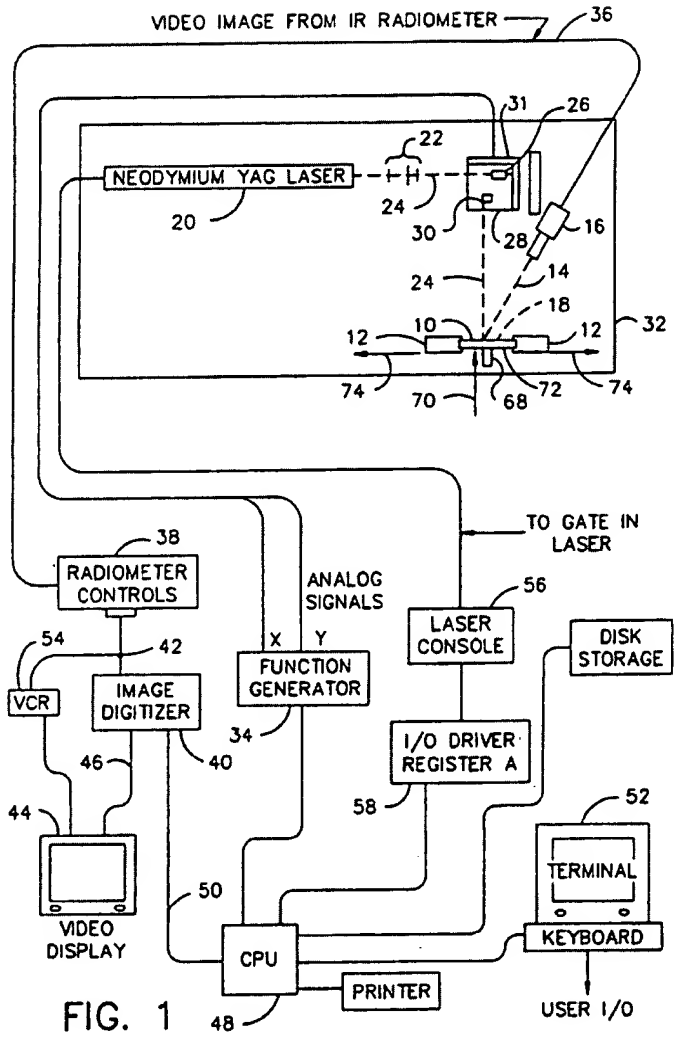

FIG. 1

Thus, the undersigned believes that Claims 1, 3, 15, 18, and 24 are now in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 50-3145, under Order No. 209529-81571 from which the undersigned is authorized to draw.

Dated: February 8, 2006

Respectfully submitted,

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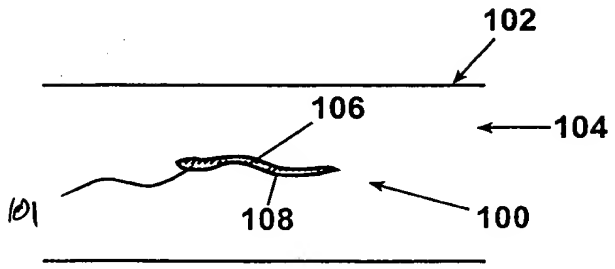

Fig. 1A

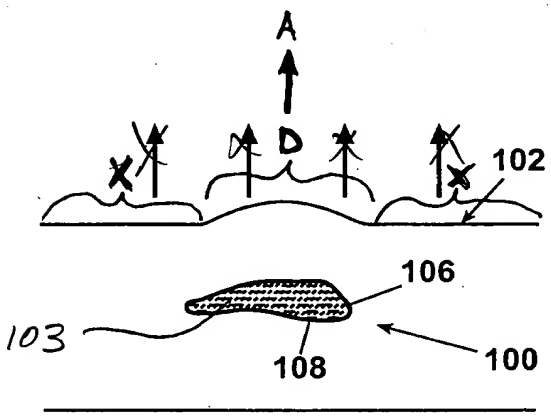

Fig. 1B

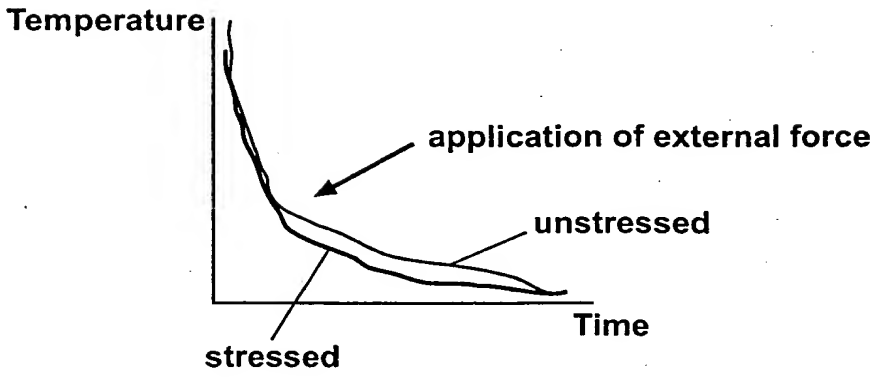

Fig. 1C